



# Wellness & Interior Air Quality

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# Purpose of Wellness & Interior Air Quality

- An overview of contributing factors to Interior Air Quality
- Where Paint sits in the scheme of things



## A look at:

- Interior Air Quality
- Mould resistance & Anti Bacterial products
- Volatile Organic Compounds (VOC's)
- Environmental Choice NZ
- NZGBC Greenstar/Homestar

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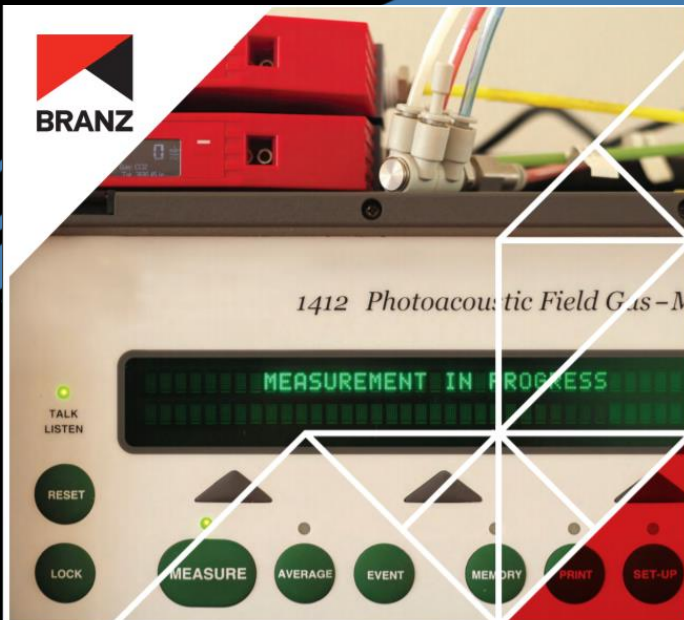
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# Interior Air Quality



## Indoor Air Quality in New Zealand Homes and Schools

*A literature review of healthy homes and schools with  
emphasis on the issues pertinent to New Zealand.*

Comprehensive source of  
information

# Interior Air Quality

Interior Air Quality is a combination of outdoor (ambient) pollutants and pollutants generated within the Indoor environment.

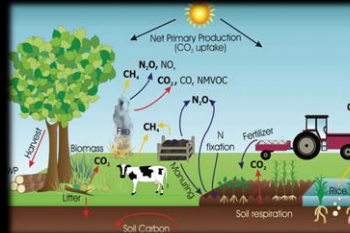
## Outdoor air can be polluted with:



Vehicle emissions



Industrial emissions



Agricultural emissions



Natural emissions



Combustion smoke



Fungi spores



Waste emissions

# Interior Air Quality

Interior Air Quality is a combination of outdoor (ambient) pollutants and pollutants generated within the Indoor environment.

## Indoor air pollutants can be:

- **MICROBIOLOGICAL** - fungi, bacteria (mould etc), dust mites and their byproducts
- **RESPIRABLE Particulate matter** - from smoke, vehicle emissions, tobacco smoke, fungi spores & pollen etc
- **GAS POLLUTANTS**- such as Carbon Monoxide, Nitrogen dioxide etc
- **VOC's** - Emitted from Building materials, furnishings & finishes

# Outdoor (Ambient) Air

# Indoor Air Quality

Emissions from Transport, Industrial & Energy Supply, Fires, Agriculture, Waste Management Households, Airborne dust

Bathrooms: Mould, Mildew, bacteria, odours and microbial pathogens, VOC's and other chemicals from personal care products & cleaning products

Laundries: VOC's from cleaning products, Mould, Mildew, bacteria odours and microbial pathogens

Offices: VOC's & toxins from Printers, Electronics etc

Bedrooms: VOC's & other chemicals from personal care products (ie cosmetics, hairsprays, nail polishes etc) upholstery, furniture, carpets. Dust & dust mites

Garages: Carbon Monoxide from cars, VOC's from stored paints, solvents, herbicides, pesticides

Kitchens: Emissions from Cooking eg carbon dioxide, nitrogen dioxide from gas cookers.

Living Room & others: Air conditioning units - filters unable to remove pathogens, VOC's, odours Circulates within ventilating room

Living Room: CO, NO2 from fires & heaters, Animal hair, dust, Tobacco smoke, VOC's & formaldehyde from furnishings, Upholstery, carpets, paints. Dust & dust mites. VOC's and toxins from electronics, formaldehyde

Airborne particulates from cooking oils, food etc. Mould, Mildew, bacteria, odours and microbial pathogens



# Formaldehyde sources



Note: Resene Environmental Choice products do not contain formaldehyde



# Interior Air Quality

Some health issues caused by poor Interior Air Quality:

- Asthma & Respiratory Issues
- Allergies & infections
- Eye, Skin, Nose, throat irritations
- Fatigue & depression

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# Interior Air Quality

## Where does Paint sit?

Some contributing factors to poor health where paint innovation can help:

- **MICROBIOLOGICAL** - Mould, Mildew, bacterial etc (Increased mould & anti bacterial properties in paint)
- **VOC LEVELS** - Waterborne Low or Zero VOC products
- Ensuring we are aligned with Organisations & Product Declaration & Eco labelling focusing on the environment & improving health outcomes



**MICROBIOLOGICAL**

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# Mould & bacterial Growth

- Mould & mildew growth is always associated with damp, low light and poorly ventilated room spaces.
- Mould spores present real health risks following inhalation , especially in those already with weak immune system, allergies, or respiratory issues
- To eliminate mould you must alter the environment eg increase temperature, air movement, ventilation and reduce moisture



# Mould & bacterial Growth

- Kitchen & Bathroom products have added Mould Defender to minimize mould & bacteria growth
- They also include Anti-bacterial silver which is internationally recognized as a safe and healthy method of deodorizing & sanitising surfaces that come into contact with skin, food & water.



# Formaldehyde Abatement





**VOC's**  
Volatile organic Compounds

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# Radiata Pine

emits Terpenes (VOC's)





# The Blue Mountains

Trees release eucalyptus oils (VOC's)



# Consumer products



# VOC's

Commonly enter the body through breathing or skin contact



## Most at Risk (eg Trade Painter)

- Regular users of paint are the group most likely to be affected by a VOC related condition



# What's in a can?

- **BINDERS** stick the paint together, form a film and give adhesion
- **PIGMENTS** to colour the paint, control gloss, prevent corrosion, add bulk and other properties.
- **SOLVENTS** to make paint useable.
- **Thickeners** to hold the wet paint in suspension, prevent sagging.
- **Additives** to do all the little, but important jobs.



# Solvent evaporation

Solvent-based



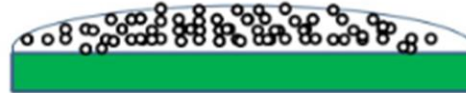
↓ Solvent evaporation



↓ Copolymer diffusion



Water-borne



↓ Water evaporation



↓ Particle coalescence

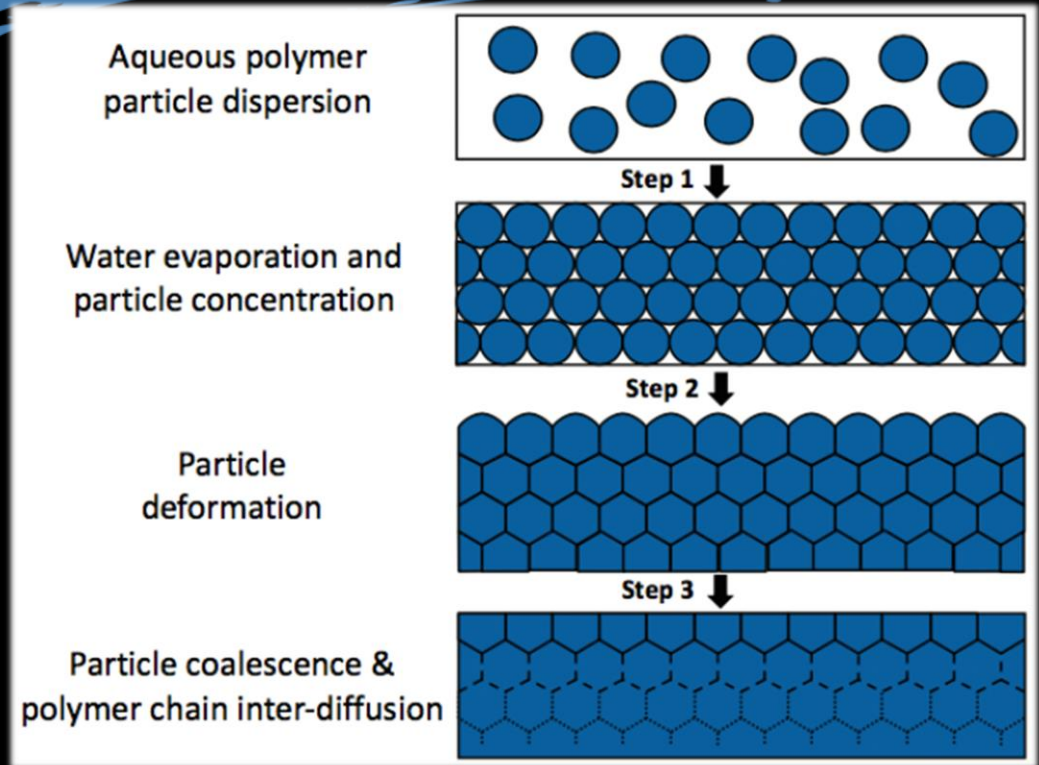


↓ Copolymer diffusion



# Coalescing of waterborne paint

- Resin needs to flow together
- contact to form dry film structure
- Fuse together



Why do waterborne  
paints have VOC's?

Durability &  
Performance





# Wet edge, flow and levelling

- Coalescent keeps wet edge open longer to allow the paint film to flow & settle
- Drying too fast results in poor film formation, texture, and roller marks



Shadows showing roller marks

# Performance & Durability

Just removing VOC from paint has a direct & adverse effect on the performance and durability of a coating

# USA

Main definition is around contribution to  
Photochemical Smog



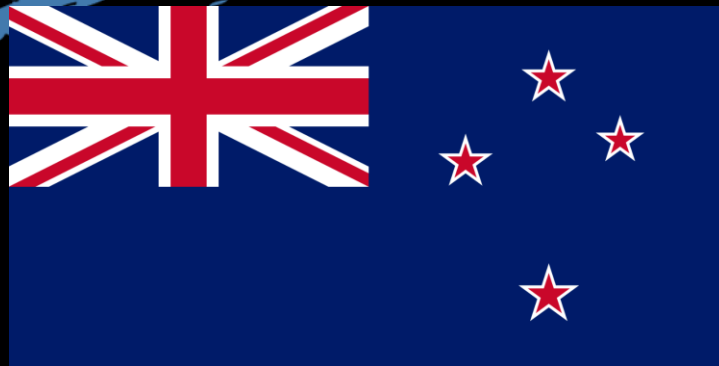
# European Union

Main definition is around organic  
compounds boiling points



# NZ & Australia

Main definition is around boiling points



# VOC level declaration in NZ & Aus

Calculated by the Paint Manufacturer in accordance  
with the Australian Paint Approval Scheme (APAS)

Statement below is provided on the Resene VOC summary list

Staff in the Quality Assurance Laboratory of Resene Paints Ltd calculate the potential Volatile Organic Compound (VOC) levels in a product from the characteristics and quantities of raw materials used. This calculation is done according the Australian Paint Approval Scheme (APAS) which defines VOCs as any organic compound included in a paint formulation (either as individual ingredients of the formula or as part of an intermediate raw material), which has a vapour pressure more than 0.01mm Hg at 21°C; or an initial boiling point <250°C measured at a standard pressure of 101.3kPa.

# Performance & Durability

Replacing resin technology comes at a cost

Traditional Resin Technologies = \$

Innovative waterborne Resin Tech = \$\$\$



What's the future of Paint?

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Eco-Labels, 3rd Party Certification,  
Industry Organisations  
(who's checking on the Industry?)

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# Environmental Choice NZ



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# Environmental Choice NZ



Cert.TM

## About Environmental Choice New Zealand

In New Zealand, Environmental Choice is the official environmental label. More than listing environmentally friendly products for green homes or businesses, the ECNZ ecolabel offers strong proof of environmental performance.



New Zealand's only Type 1 Government-owned ecolabelling programme, Environmental Choice deals specifically with products and services, not organisations. Its licensing process is against rigorous, transparent, independently developed specifications that take into account the lifecycle impact of the product or service. It meets the ISO 14020/24 principles.

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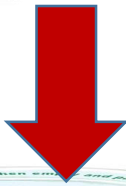
  
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Please note the VOC levels listed below reflect the worst case scenario across the full range of coloured bases available for the product listed. Resene also has a full range of Resene Decorative Colours with no added VOCs, so all decorative products can be tinted without adding any additional VOCs.



Product	Approx VOC grams Per litre	Also Environmental Choice approved
Resene Ceiling Paint	1	Yes
Resene Ceiling Velvet	410	-
Resene Cemseal	0	Yes
Resene Clearcoat UVS	59	Yes
Resene ClinicalCote	4	Yes
Resene Colorwood	90	Yes
Resene Colorwood Enhance	75	Yes
Resene Colorwood Whitewash	95	Yes
Resene Concrete Clear	Flat 48, Satin 63, Gloss 63	Yes
Resene Concrete Primer	40	Yes
Resene ConcreteSeal 3 in 1	748	-
Resene Concrete Stain (includes Resene Concrete Conservor)	754	-
Resene Concrete Wax	52	Yes
Resene Contractor	39	Yes
Crown Acrylic Fence Paint	0-7	Yes
Crown Acrylic Primer Sealer Undercoat	30	Yes

**Who's promoting better  
Buildings & Indoor Air  
Quality?**



# Who's promoting better Buildings & Indoor Air Quality?



The New Zealand Green Building Council (NZGBC) is a non-profit membership organisation that promotes better buildings, because better buildings mean healthier, happier people



# Who's promoting better Buildings & Indoor Air Quality?



Internationally recognised rating system for design, construction, and operations of buildings, fitouts, and communities

**INTERIOR PAINT IS INCLUDED IN:  
Credit 13.1- Indoor Air Pollutants  
(Environmental Choice NZ)**

Summary:

95% of total volume = 1 point (total of Paint, Adhesives, Sealants, carpets)





# Who's promoting better Buildings & Indoor Air Quality?

Comprehensive, Independent rating tool that measures health, warmth, and efficiency of new homes in NZ.



**PAINT IS INCLUDED IN:**

**MAT1 - Sustainable Materials**

Applied Coatings (Environmental Choice NZ)

50% of total volume = 2 points

**MAT2 - Healthy Materials**

Applied coatings (Environmental Choice NZ)

50% of total volume = 1 point





# “Vegan” Paints

“Vegan” Paints are not specifically focused on eco-toxicity like eco-friendly paints are but are focused on avoiding animal by-products.

“Eco-friendly” paints focus on minimising toxicity, but this can mean some products could have animal by-products in them, such as something like beeswax that could be used as a final coat on cabinetry.

Most Resene waterborne paints are eco-friendly, with Environmental Choice approval, and are also “vegan” paints as they don’t contain animal products or by-products.

Vegans need to take care choosing ‘natural’ paint options as they may contain animal by-products.

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## Summary:

- Exterior air quality contributes to Interior Air Quality
- VOC's are all around us
- High number of consumer products with VOC's & chemicals
- To eliminate mould etc you need to change the environment
- There's household items we don't realised are emitting pollutants
- Waterborne Low VOC paint is a small contributor
- Performance and durability are affected if you just take out VOC from paint
- Environmental Choice NZ is the Eco label to look for
- NZ Green Building Council - Greenstar & Homestar are the rating tools to look for

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Q & A

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Thanks for tuning in

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